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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,774	01/15/2004	Daniel K. Zitting	2822-6022US (01-2)	5475
24247	7590	09/14/2006	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			LEE, GILBERT Y	
			ART UNIT	PAPER NUMBER
			3673	

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/757,774

Applicant(s)

ZITTING ET AL.

Examiner

Gilbert Y. Lee

Art Unit

3673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 49, 50, 52-69, 91 and 93-130 is/are pending in the application.
- 4a) Of the above claim(s) 5, 10-12, 56, 61, 64-68, 93-98 and 100 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 114-130 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 13, 49, 50, 52-55, 57-60, 69, 91, 99 and 101-113 is/are rejected.
- 7) ☒ Claim(s) 62 and 63 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed 8/28/06 has been entered.
2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Note please see Examiner's Attachment from office action 5/22/06 for reference characters A and B regarding the first and second flanges.

3. Claims 1-3, 6-8, 49, 50, 52-55, 57-60, and 69 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawai et al. (US Patent No. 5,050,892).

Regarding claim 1, the Kawai et al. reference discloses a sleeve element (10B) for sealing between a piston (20) and a bore surface (30a) comprising:

Art Unit: 3673

a substantially annular body (Fig. 5) including an inner surface, an outer surface, a first end region (region at left most element 14), and a second end region (region at right most element 14);

wherein at least a portion of the first end region of the annular body is configured to be biased laterally into a recess (recesses formed with surface 21);

at least one sealing feature (14); and

at least one depression (13) wherein at least a portion of the at least one depression is sized, located and configured to lie over the at least one recess (Fig. 6) to provide increased lateral flexure for the biasing of the at least a portion of the first end region into the at least one recess (Fig. 6), the at least one depression positioned proximate to the at least one sealing feature (Fig. 6).

Regarding claim 2, the Kawai et al. reference discloses a bearing surface (surface of elements 14 in contact with bore surface 30a).

Regarding claims 3, 6, 50, and 54, the Kawai et al. reference discloses the sleeve element comprising PTFE (Col. 3, Lines 63-67). Note that PTFE is known to be resilient and will allow the seal to be compressed.

Regarding claim 7, the Kawai et al. reference discloses a first sealing feature (left most element 14) configured to be biased laterally into a first recess (recess under left most element 14).

Regarding claim 8, the Kawai et al. reference discloses a second sealing feature (right most element 14) configured to be biased laterally into a second recess (recess under right most element 14).

Art Unit: 3673

Regarding claim 49, the Kawai et al. reference discloses a seal assembly (Fig. 5) for sealing between a piston element (20) and a bore surface (30a) comprising:

- a piston element having a surface (Fig. 5);

- a sleeve element (10B) positioned between the piston element surface and a bore surface disposed thereabout, the sleeve element having an inner and an outer surface (Fig. 5), a first end region (region at left most element 14), and a second end region (region at right most element 14);

- a first recess (left most recess formed with surface 21) formed in the piston element surface; and

- at least one depression (13) wherein at least a portion of the at least one depression is sized, located and configured to lie over the at least one recess (Fig. 6) to provide increased lateral flexure for the biasing of the at least a portion of the first end region into the at least one recess (Fig. 6).

- wherein at least a portion of the first end region of the sleeve element is laterally adjacent to the first recess (fig. 5) and is configured to be biased laterally into recess (Fig. 6);

- wherein the sleeve element includes a first sealing feature (14) extending from the outer surface thereof (Fig. 5), proximate to the at least a portion of the first end region configured to biased laterally into the first recess (Fig. 6), the first sealing feature configured to sealingly engage against the bore surface (Figs. 5 and 6).

Regarding claim 52, the Kawai et al. reference discloses the outer surface of the sleeve element (10B) as a bearing surface (Figs. 5 and 6).

Regarding claim 53, the Kawai et al. reference discloses a sleeve element sized and configured to engage the piston element surface with the inner surface of the annular body (Figs. 5 and 6).

Regarding claim 55, the Kawai et al. reference discloses the sleeve element on the surface of the piston element (Col. 5, Lines 57-61).

Regarding claims 57 and 60, the Kawai et al. reference discloses a first sealing region (sealing region at left most element 14) configured to be biased laterally into a first recess (left most recess formed with surface 21) and a second sealing region (sealing region at right most element 14) configured to be biased laterally into a second recess (right most recess formed with surface 21). Note that if enough pressure is generated by the bore, that the elements 14 would be biased into their respective recesses.

Regarding claim 58, the Kawai et al. reference discloses a second recess (right most recess formed with surface 21) and a second sealing feature (right most element 14) configured to be biased laterally into a second recess (Fig. 6).

Regarding claim 59, the Kawai et al. reference discloses a first (A) and second (B) retention flange formed to exceed the lateral extent of the sleeve element (Figs. 5 and 6).

Regarding claim 69, the Kawai et al. reference discloses that the sleeve element, the first recess, and the second recess are each sized and configured to promote a selected amount of deflection of the first end region of the sleeve element into the first

Art Unit: 3673

recess and a selected amount of deflection of the second end region of the sleeve element into the second recess (Figs. 6).

4. Claims 1 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Brenneke (US Patent No. 3,198,531).

Regarding claim 1, the Brenneke reference discloses a sleeve element (36) for sealing between a piston (30) and a bore surface (e.g. surface of element 46 in contact with element 36) comprising:

a substantially annular body (Fig. 1) including an inner surface, an outer surface, a first end region (e.g. 20 and 18), and a second end region (e.g. 21 and 19);

wherein at least a portion of the first end region of the annular body is configured to be biased laterally into a recess (32);

at least one sealing feature (42); and

at least one depression (e.g. depression above element 42 and below element 30) wherein at least a portion of the at least one depression is sized, located and configured to lie over the at least one recess (Fig. 4) to provide increased lateral flexure for the biasing of the at least a portion of the first end region into the at least one recess (Fig. 4), the at least one depression positioned proximate to the at least one sealing feature (Fig. 4).

Regarding claim 7, the Brenneke reference discloses a first sealing feature (42) configured to be biased laterally into a first recess (32).

Regarding claim 8, the Brenneke reference discloses a second sealing feature (43) configured to be biased laterally into a second recess (33).

Regarding claim 9, the Brenneke reference discloses a first depression (e.g. depression above element 42 and below element 30) and a second depression (e.g. depression below element 43 and above element 30), each depression formed in the outer surface of the substantially annular body (Fig. 4);

wherein the first depression is positioned proximate to the first sealing feature and the second depression is positioned proximate to the second sealing feature (Fig. 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 13, 91, 99, 101-104, and 108-112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al. in view of Prasse et al. (US Patent No. Re 31,005).

Regarding claims 4 and 13, the Kawai et al. reference discloses the invention substantially as claimed in claim 1.

Art Unit: 3673

However, the Kawai et al. reference fails to explicitly disclose the annular body interferingly engaging the piston element surface as well as the annular body being continuous.

The Kawai et al. reference, a piston ring, discloses that a piston ring can be split or continuous (Col. 4, Lines 47-66).

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the annular body of the Kawai et al. reference continuous in view of the teachings of the Prasse et al. reference in order to provide an annular body without any breaks to ensure a solid seal. Note that it would be obvious that the continuous annular ring would be interferingly engaging the piston element surface because the modified annular body would be shrink fit to fit within the groove (Prasse et al. Col. 4, Lines 49-52).

Regarding claim 91, the Kawai et al. reference discloses a method of forming a seal between a bore surface (30a) and a piston element surface (22B), the method comprising:

- providing a piston element (20) having a surface (22B);

- providing a bore (30) having a surface (30a);

- providing a sleeve element (10B) having an inner and outer surface (Fig. 5), an end region (either end region including elements 14), and a sealing feature (14) disposed generally within the end region;

- providing a depression (13) in at least one of the inner surface and the outer surface of the sleeve element;

providing a recess (recesses formed with surface 21) formed in one of the bore surface and the piston element surface (Fig. 5);

disposing the sleeve element between the piston element and the bore surface including positioning at least a portion of the depression over the recess (Figs. 5 and 6); and

biasing at least a portion of the end region of the sleeve element into the recess (Fig. 6).

However, the Kawai et al. reference, fails to explicitly disclose elongating the sleeve element to increase the size of an interior surface thereof and disposing the sleeve element about the piston element.

The Kawai et al. reference, a piston ring, discloses that a piston ring can be split or continuous, and if continuous to stretch and shrink the annular body to fit on the piston head (Col. 4, Lines 47-66).

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the annular body of the Kawai et al. reference continuous in view of the teachings of the Prasse et al. reference in order to provide an annular body without any breaks to ensure a solid seal. Note that it would be obvious that the continuous annular ring would be interferingly engaging the piston element surface because the modified annular body would be shrink fit to fit within the groove (Prasse et al. Col. 4, Lines 49-52).

Regarding claim 99, the Kawai et al. reference, as modified in claim 91, discloses biasing at least a portion of the end region into a recess formed in the piston element

Art Unit: 3673

surface by sealingly engaging the bore surface against the sealing feature of the sleeve element (Fig. 6). Note that if enough pressure is generated by the bore, that the elements 14 would be biased into their respective recesses.

Regarding claim 101, 108, and 109, the Kawai et al. reference discloses a sleeve element (10B) for sealing between a piston (20) and a bore surface (30a) comprising:

a substantially annular body (Fig. 5) including an inner surface, an outer surface, a first end region (region at left most element 14), and a second end region (region at right most element 14);

wherein at least a portion of the first end region of the annular body is configured to be biased laterally into a recess (recesses formed with surface 21);

at least one sealing feature (14); and

at least one depression (13) wherein at least a portion of the at least one depression is sized, located and configured to lie over the at least one recess (Fig. 6) to provide increased lateral flexure for the biasing of the at least a portion of the first end region into the at least one recess (Fig. 6), the at least one depression positioned proximate to the at least one sealing feature (Fig. 6).

However, the Kawai et al. reference fails to explicitly disclose the annular body interferingly engaging the piston element surface as well as the annular body being continuous.

The Kawai et al. reference, a piston ring, discloses that a piston ring can be split or continuous (Col. 4, Lines 47-66).

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the annular body of the Kawai et al. reference continuous in view of the teachings of the Prasse et al. reference in order to provide an annular body without any breaks to ensure a solid seal. Note that it would be obvious that the continuous annular ring would be interferingly engaging the piston element surface because the modified annular body would be shrink fit to fit within the groove (Prasse et al. Col. 4, Lines 49-52).

Regarding claims 102 and 110, the Kawai et al. reference, as modified in claims 101 and 109, discloses a bearing surface (surface of elements 14 in contact with bore surface 30a).

Regarding claims 103, 104, 111 and 112, the Kawai et al. reference, as modified in claims 101 and 109, discloses the sleeve element comprising PTFE (Col. 3, Lines 63-67). Note that PTFE is known to be resilient and will allow the seal to be compressed.

6. Claims 101, 105-107, 109, and 113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brenneke in view of Prasse et al.

Regarding claims 101 and 109, the Brenneke reference discloses a sleeve element (36) for sealing between a piston (30) and a bore surface (e.g. surface of element 46 in contact with element 36) comprising:

a substantially annular body (Fig. 1) including an inner surface, an outer surface, a first end region (e.g. 20 and 18), and a second end region (e.g. 21 and 19);

Art Unit: 3673

wherein at least a portion of the first end region of the annular body is configured to be biased laterally into a recess (32);

at least one sealing feature (42); and

at least one depression (e.g. depression above element 42 and below element 30) wherein at least a portion of the at least one depression is sized, located and configured to lie over the at least one recess (Fig. 4) to provide increased lateral flexure for the biasing of the at least a portion of the first end region into the at least one recess (Fig. 4), the at least one depression positioned proximate to the at least one sealing feature (Fig. 4).

However, the Brenneke reference fails to explicitly disclose the annular body interferingly engaging the piston element surface as well as the annular body being continuous.

The Brenneke reference, a piston ring, discloses that a piston ring can be split or continuous (Col. 4, Lines 47-66).

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the annular body of the Brenneke reference continuous in view of the teachings of the Prasse et al. reference in order to provide an annular body without any breaks to ensure a solid seal. Note that it would be obvious that the continuous annular ring would be interferingly engaging the piston element surface because the modified annular body would be shrink fit to fit within the groove (Prasse et al. Col. 4, Lines 49-52).

Regarding claims 105 and 113, the Brenneke reference, as modified in claim 101, discloses a first sealing feature (42) configured to be biased laterally into a first recess (32).

Regarding claim 106, the Brenneke reference, as modified in claim 105, discloses a second sealing feature (43) configured to be biased laterally into a second recess (33).

Regarding claim 107, the Brenneke reference, as modified in claim 106, discloses a first depression (e.g. depression above element 42 and below element 30) and a second depression (e.g. depression below element 43 and above element 30), each depression formed in the outer surface of the substantially annular body (Fig. 4);

wherein the first depression is positioned proximate to the first sealing feature and the second depression is positioned proximate to the second sealing feature (Fig. 4).

Allowable Subject Matter

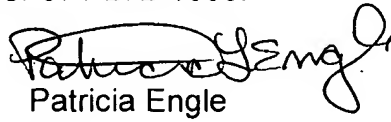
7. Claims 114-130 are allowed.
8. Claims 62 and 63 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 3673

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gilbert Y. Lee whose telephone number is 571-272-5894. The examiner can normally be reached on 8:00 - 4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia L. Engle can be reached on (571)272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Patricia Engle
SPE
Art Unit 3673

GL
9/11/06